

DoD Global Influenza Surveillance Program: *Influenza Surveillance at AFIOH*

Overall Lab Surveillance

Total Specimens Collected

- Collected in Week 12: **39**
- Season Total: **2,084**

Total Influenza Isolates

Includes subtyped isolates

- Influenza A: **344**
- Influenza B: **147**

Total Isolates Subtyped

- A/H1N1: **21**
- A/H3N2: **224**
- B/HongKong: **42**
- B/Shanghai: **9**

Sentinel Site Lab Surveillance

Sentinel Specimens Collected

- Collected in Week 12: **23**
- Season Total: **1,399**

Sentinel Influenza Isolates

Includes subtyped isolates

- Influenza A: **270**
- Influenza B: **57**

Sentinel Isolates Subtyped

- A/H1N1: **15**
- A/H3N2: **177**
- B/Hong Kong: **20**
- B/Shanghai: **5**

Overseas Research Lab Surveillance

Research Specimens Collected

- Collected in Week 12: **0**
- Season Total: **302**

Research Influenza Isolates

Includes subtyped isolates

- Influenza A: **8**
- Influenza B: **84**

Research Isolates Subtyped

- A/H1N1: **1**
- A/H3N2: **6**
- B/Hong Kong: **21**
- B/Shanghai: **4**

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Week 12

19-25 March 2006

Current WHO Phase of Pandemic Alert: **PHASE 3**

***Phase 3** = a new influenza virus subtype is causing disease in humans, but is not yet spreading efficiently and sustainably among humans. *The designation of phases, including decisions on when to move from one phase to another, is made by the Director-General of WHO.* Source: [WHO](#)

Influenza (02 Oct - Present)

491 influenza isolates
344 Influenza A; 147 Influenza B

24% of completed specimens were positive for an influenza virus: 17% influenza A; 7% influenza B.

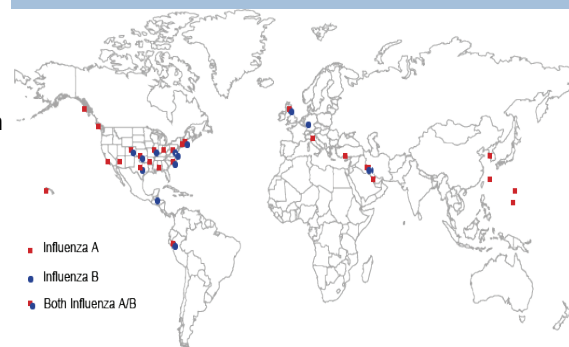
Influenza A

A (H1N1): 21
A (H3N2): 224
Un-subtyped: 99

Influenza B

B (Hong Kong): 42
B (Shanghai): 9
Un-subtyped: 96

Locations of identified influenza viruses



Vaccination Status

96% of the Active Duty Air Force, 93% of Air National Guard, and 82% of Air Force Reserve are currently vaccinated (as of 29 Mar 06). (Data gathered by MILVAX)

Update: Human Avian Influenza (H5N1)

- Egypt:** 2nd fatal case of human H5N1 confirmed by MoH (1st confirmed on 20 Mar). Patient was a 30-yr-old female from Qaliubiya governorate, near Cairo. Symptoms began on 12 March, patient hospitalized on 16 March and died on 27 March. See [WHO update](#).
- China:** 16th case of human H5N1 confirmed. Patient was a 29-year-old female migrant worker, was hospitalized in Shanghai on 15 March with symptoms of pneumonia and died on 21 March. See [WHO update](#).
- Cambodia:** 5th case of human H5N1 confirmed. Patient was a 3-year-old girl from Kampong Speu Province (southern part of the country). Symptoms began on 14 March, patient was hospitalized on 20 March and died on 21 March. See [WHO update](#).
- See [pg 6](#) for WHO cumulative cases. See [WHO's situational update](#) for more information.

Influenza Outbreaks / News

We understand that Guatemalan health care facilities around the country had reported an increase in respiratory illnesses last week, and reported 17 deaths in patients suffering from respiratory syndromes (*it is believed that these deaths were associated with the Influenza virus currently circulating in Guatemala*). It appears that some of the deaths occurred in individual suffering from AIDS. The Guatemalan MOH has isolated influenza A/H3N2 in culture from several patients. USACHPPM-West received 10 specimens from the Guatemalan MOH last week and detected one influenza A/H3N2 virus (remaining 9 were negative). CHPPM-W has coordinated the shipment of specimens from Guatemala to AFIOH for evaluation next week.

AFIOH Report Overview

This report summarizes the status of all respiratory viral cultures processed at the AFIOH laboratory, which includes specimens collected from DoD beneficiaries at 43 Tri-Service sentinel sites and several non-sentinel sites, as well as from foreign nationals through DoD overseas research laboratories (Armed Forces Institute of Medical Sciences [AFRIMS], the Naval Medical Research Center Detachment [NMRC-D], and the US Army Center for Health Promotion and Preventive Medicine West [CHPPM-W]).

Overall Laboratory Surveillance

Week 12 overview. At this time, 12 sites (7 sentinel and 5 non-sentinel) have shipped 39 specimens that were collected from patients during Week 12. See map to right. Of the specimens with completed results (n=17), 65% were positive for influenza (8 influenza A and 3 influenza B).

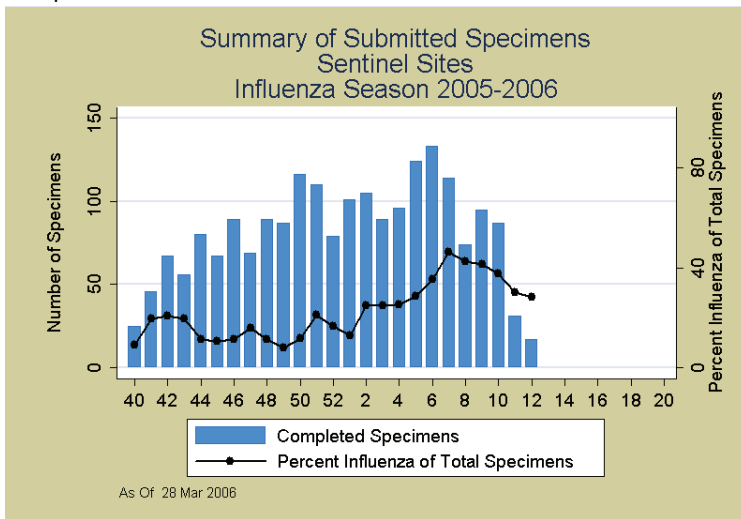
Season overview. Since 02 October 2005, 73 sites (37 sentinel, 33 non-sentinel, and 3 overseas research sites) have submitted a total of 2,084 specimens to the AFIOH laboratory. Of these, 97% (n=2,030) have a completed result, with 24% (n=491) positive for an influenza virus (Graph 1): 17% influenza A; 7% influenza B. Furthermore, 2% (n=50) were positive for parainfluenza, 3% (n=51) were adenovirus, 0.8% (n=17) were enterovirus, 0.8% (n=17) were HSV, and 0.6% (n=12) were RSV (Graph 2).

MAP: Geographic coverage of DoD Influenza Surveillance*

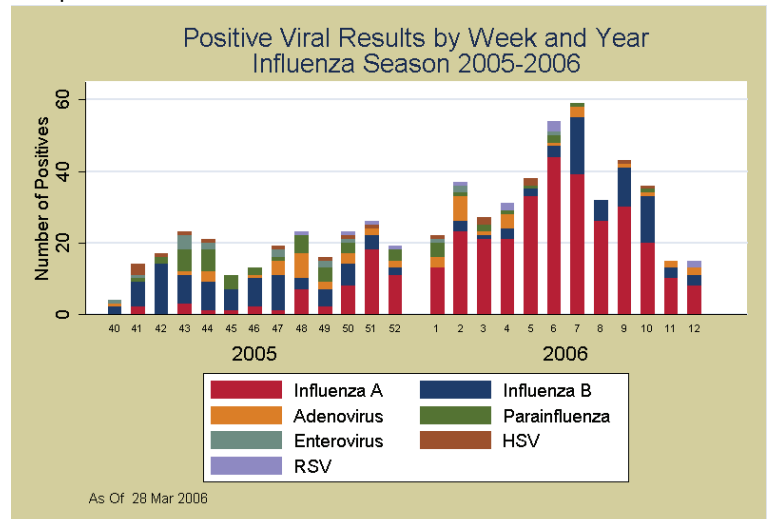


* As determined from specimen submissions. Even though an entire location is highlighted, surveillance may be limited in scope

Graph 1



Graph 2

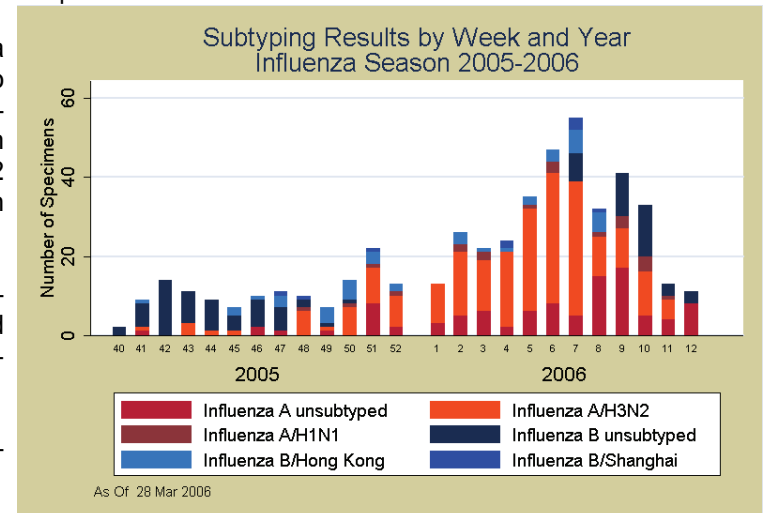


Influenza Subtype and Sequence overview. All influenza isolates have been typed, and the AFIOH laboratory plans to subtype all OCONUS isolates and a portion of CONUS isolates. Of the 491 influenza isolates, 60% (n=296) have been subtyped: 224 influenza A/H3N2, 21 influenza A/H1N1, 42 influenza B/Hong Kong, and 9 influenza B/Shanghai (Graph 3).

Five (24%) of the H1N1 sub-typed isolates have been sequenced and there are notable genetic differences compared to the currently used influenza A/New Caledonia/20/99 vaccine strain.

Additionally, several H3N2 sub-typed isolates have been se-

Graph 3



The following information is gathered from the Influenza Surveillance Questionnaires submitted primarily by sentinel sites.

Vaccine Effectiveness. Vaccination status was identified in 37% (n=182) of the patients positive for influenza. Of these, 44% (n=80) were vaccinated > 2 weeks prior to infection (1 patient was vaccinated 2 days prior to infection). Isolates from these patients have been sub-typed as H3N2 (n=30), H1N1 (n=6), and B Hong Kong (n=2).

Hospital/Quarter status. Two percent (n=23) of patients with surveillance questionnaires were hospitalized. Of these, 13% (n=3) were positive with influenza (2 unvaccinated patients positive for influenza A/H3N2 and 1 vaccinated patient positive for influenza B) and 87% (n=20) were negative for a respiratory virus. Additionally, 30 influenza A and 2 influenza B-positive patients were placed on "quarters" for at least 24 and no more than 72 hours (75% [n=24] of these patients were vaccinated).

Regional Influenza Activity, 02 October 2005 - Present

Influenza A

(H1N1) - Identified from sites located in Asia (S. Korea, Japan, Saipan), the Middle East (Qatar, Kuwait), and North America (U.S.).

(H3N2) - Identified from sites located in Asia (S. Korea, Saipan, Guam, Japan, Kuwait), Europe (Italy, Turkey, the U.K.), and North America (U.S.).

WHO also reported both influenza A/H3N2 and A/H1N1 viruses in the United States and Japan.

Influenza B

(Hong Kong) - Identified from sites in Europe (Germany, the U.K.), the Middle East (Kuwait), South America (Peru), and North America (U.S.).

(Shanghai) - Identified from sites in the Middle East (Kuwait), Central America (Honduras), South America (Peru), and North America (U.S.).

Although AFIOH did not detect influenza B in Asia, WHO reported influenza B isolates in Japan.

Table 1. Influenza by SITE and REGION

Site by REGION		Sentinel Status	Influenza A			Influenza B			Total Influenza
			Not-subtyped	H3N2	H1N1	Not-subtyped	Hong Kong	Shanghai	
OCNUS									
Asia									
121st Army, S. Korea	Sentinel			4	3				7
Osan AB, S. Korea	Sentinel			4	3				7
Andersen AFB, Guam	Sentinel			3					3
Camp Zama, Japan	Sentinel	1		16					17
Kadena AB, Japan	Sentinel	1		3					4
NH Okinawa, Japan	Sentinel			3					3
NH Yokosuka, Japan	Sentinel			7	2				9
Yokota AB, Japan	Sentinel			2	3				5
Misawa AB, Japan	Sentinel			1					1
Saipan, CMNI	Research lab			6	1				7
Europe									
Aviano AB, Italy	Sentinel			1					1
Incirlik AB, Turkey	Sentinel			2					2
Ramstein AB, Germany	Sentinel					1	1		2
RAF Lakenheath, U.K.	Sentinel		5	4		17	13		39
Deployed									
Al Udeid AB, Qatar	Sentinel		2		1				3
Ali Al Salem AB, Kuwait	Sentinel			1			1		2
Camp Arifjan, Kuwait	Sentinel			3	1				4
Camp Buehring, Kuwait	Sentinel							1	1
Central America									
CHPPM-W, Honduras	Research lab					1		3	4
South America									
NMRC-D, Peru	Research lab		1			58	21	1	81
CONUS									
East North Central									
Scott AFB, IL	Sentinel		22	17	1	1		2	43
Wright-Patterson AFB, OH	Non-Sentinel			1					1
East South Central									
Maxwell AFB, AL	Non-Sentinel		4	10					14
New England									
Hanscom AFB, MA	Non-Sentinel			1					1
NHC New England, CT	Sentinel			4					4
Mid Atlantic									
McGuire AFB, NJ	Sentinel		4	12		1			17
South Atlantic									
NAB Little Creek, VA	Sentinel			1	4		1		6
Shaw AFB, SC	Non-Sentinel		2	3		1			6
Mountain									
USAF Academy, CO	Sentinel		11	34		6	3		54
Buckley AFB, CO	Non-Sentinel		1		1				2
Davis-Monthan AFB, AZ	Non-Sentinel			1					1
Luke AFB, AZ	Non-Sentinel		2	3					5
Pacific									
CGS Ketchikan, AK	Sentinel			2					2
Elmendorf AFB, AK	Sentinel		1	2					3
NH Bremerton, WA	Sentinel		2	4					6
Tripler AMC, HI	Sentinel		5	10					15
NMC San Diego, CA	Sentinel			1					1
Travis AFB, CA	Sentinel		3						3
Edwards AFB, CA	Non-Sentinel			2					2
South Atlantic									
Andrews AFB, MD	Sentinel		10	5		1			16
NH Bethesda, MD	Sentinel		3	8	1				12
West South Central									
Barksdale AFB, LA	Non-Sentinel			1					1
Sheppard AFB, TX	Sentinel		4	14		5	1	2	26
Brooks City-Base, TX	Non-Sentinel		6	2					8
Goodfellow AFB, TX	Non-Sentinel			1					1
Lackland AFB, TX	Non-Sentinel		4	9					13
Randolph AFB, TX	Non-Sentinel			1					1
Tinker AFB, OK	Non-Sentinel		5	15		4	1		25
Total Influenza			99	224	21	96	42	9	491

Area of Responsibility (AOR)

Note: Sentinel sites are distributed among the AOR as follows: 100% of the submitting CENTCOM and EUCOM sites, 93% of the PACOM sites, and 31% of the NORTHCOM sites. The "OTHER" AOR category includes specimens collected from non-DoD beneficiaries from the local clinics surrounding the overseas research lab locations and are not considered sentinel sites.

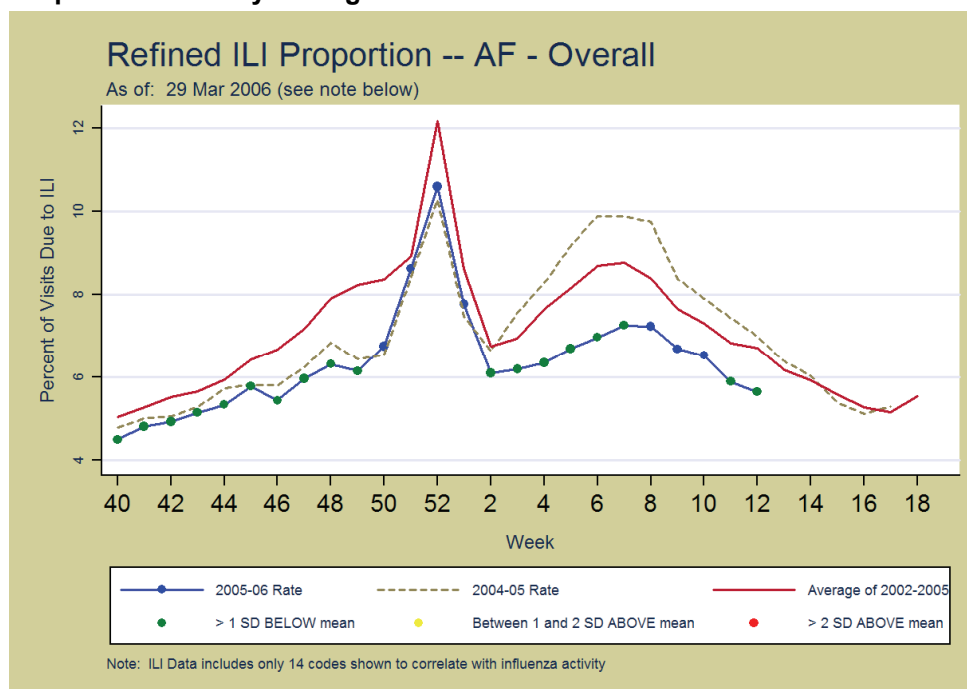
Table 2. Specimens Collected by Area of Responsibility (AOR), Week 12 and Season Totals.

Result	Area of Responsibility										ALL SITES
	CENTCOM		EUCOM		NORTHCOM		PACOM		OTHER		
	Week	Season	Week	Season	Week	Season	Week	Season	Week	Season	
Influenza A		8		12	8	240		83		1	344
Influenza B		2		32	3	29				84	147
Adenovirus			1	6	1	31		6		8	51
Parainfluenza		1		11		29		3		6	50
Enterovirus		2		5		4		3		3	17
HSV		1		3		2		2		9	17
RSV					2	11		1			12
Negative		61		155		722		275		179	1392
Pending		5		2	22	37	2	10			54
TOTAL RECEIVED	0	80	1	226	36	1105	2	383	0	290	2084

Influenza-Like Illness (ILI)*

Overview. As of 21-Mar-06. Influenza-like illness (ILI) activity among Air Force MTFs **less than 6% for Week 12**, and is 1 standard deviation (SD) below the mean. The SD is calculated weekly. It is important to note that data may vary from next week's graph.

Graph 4. ILI Activity among Air Force MTFs



*Influenza-like illness (ILI) activity is gathered from the Standard Ambulatory Data Registry (SADR). The data are cleaned and a summary total of ICD-9's that match a smaller, but more specific and sensitive list of ICDs than is in the ESSENCE tool, are presented (Graph 3). The Surveillance Team at AFIOH are in the process of creating a DoD-wide ILI graph.

Additional Influenza Surveillance: *Army MEDCENS*

The Army performs influenza surveillance at 6 Army Medical Center (MEDCEN) locations (Dwight David Eisenhower Army Medical Center [DDEAMC], Walter Reed Army Medical Center [WRAMC], Brooke Army Medical Center [BAMC], Madigan Army Medical Center [MAMC], Tripler Army Medical Center [TAMC], and Landstuhl Regional Medical Center [LRMC]), two of which are included in AFIOH's sentinel site surveillance network (see map to right). *Any influenza positive specimen identified from TAMC or LRMC in the AFIOH portion of this report are also included in the "Army MEDCEN" report.*



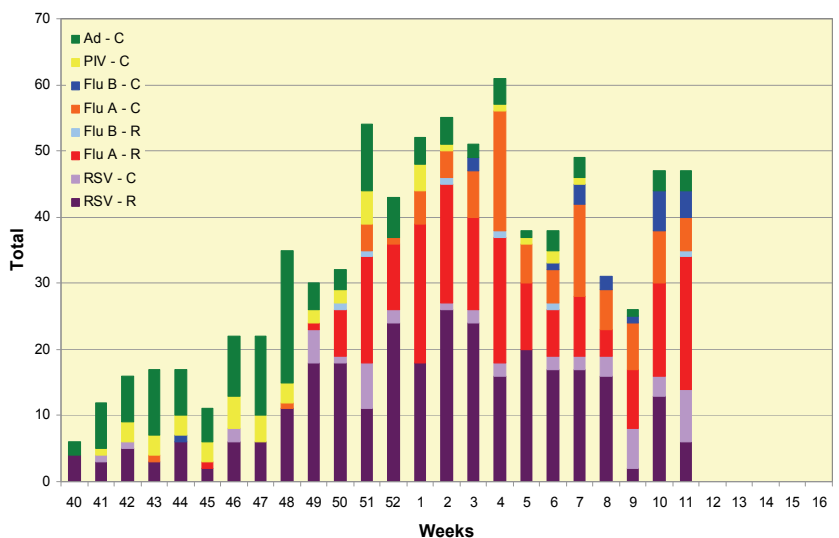
The Army MEDCEN sites are major medical centers equipped with the capability of detecting respiratory viruses, including influenza. It is important to note that the methodology varies at each site (i.e., testing procedures include direct fluorescent-antibody [DFA], various rapid antigen tests, culture, and polymerase chain reaction [PCR]) and reporting is routine, but varies from site to site (i.e., weekly, bi-weekly, monthly). The information reported and shared with AFIOH describes results from the individual MEDCENS and does not include demographic information at this time.

Graph 5. Positive Respiratory Viruses, ARMY MEDCEN*

Season overview: Since 02 October 2005, **3,794** specimens were collected and tested. Of these, 8% (n=298) were positive for an influenza virus: 7% (n=272) influenza A and 0.7% (n=26) influenza B. Furthermore, 9% (n=340) were positive for RSV, 1% (n=44) were parainfluenza, and 3% (n=130) were adenovirus. See Graph 5 for a season overview.

Duplicate data. At this time, 15 influenza A viruses are identified in both the AFIOH report and Army MEDCEN report. Both TAMC and LRMC send selected positive specimens to AFIOH for sub-typing. Ten (67%) of the influenza isolates collected from Tripler AMC have been identified as A/H3N2.

POC for Army MEDCEN surveillance: [MAJ Wade Aldous](#)



* C = Culture positive ; R = Rapid test positive

Contributions to National and Global Influenza Surveillance

It is important to note that although a country is highlighted, surveillance may be limited in scope. AFIOH provides surveillance data from 21 countries - 8 countries (Bolivia, El Salvador, Guatemala, Iraq, Kyrgyzstan, Nepal, Nicaragua, and Qatar) are not otherwise included in the current WHO network.

Note: Map describes countries submitting specimens to AFIOH and does not include all DoD contributing countries (i.e., NAMRU-2 and NAMRU-3 surveillance described on page 7).



Data Sharing

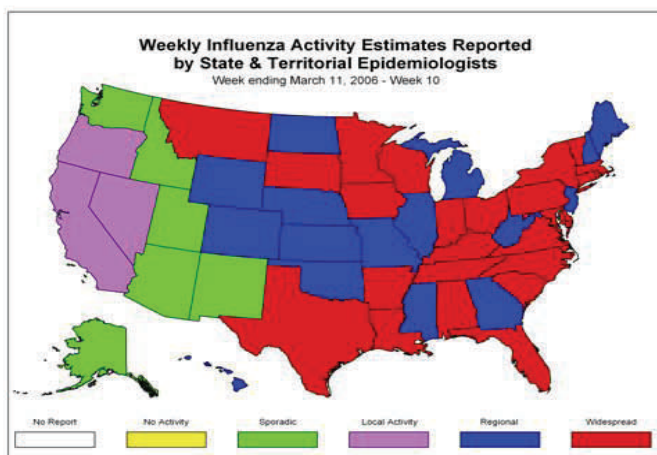
AFIOH electronically reports data to CDC using the Public Health Laboratory Information System (PHLIS). The data shared is incorporated into WHO's and CDC's influenza surveillance summaries. Additionally, data from Texas military sites are reported to the Texas Department of State Health Services (TDSHS).

CDC / WHO Influenza Surveillance

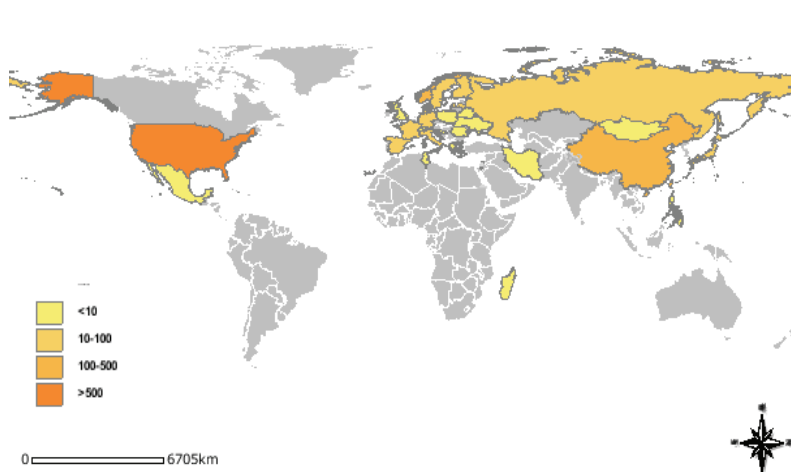
CDC reported influenza activity continuing at the same level as recent weeks during **Week 10**. Of the specimens tested during Week 10, 25.8% were positive for an influenza virus (see CDC map below). Since 02 October 2005, a total of 11.1% of specimens have tested positive for influenza in the United States.

WHO data may vary slightly from week to week. The WHO map below indicates total influenza positive specimens tested for Week 09 (see WHO map below). Please refer to [WHO's website](http://gamapserver.who.int/GlobalAtlas/home.asp) for detailed information.

CDC U.S. Influenza Surveillance Map¹



WHO International Influenza Surveillance Map²



1. National Influenza Activity (CDC): <http://www.cdc.gov/ncidod/diseases/flu/weeklychoice.htm>
2. International Influenza Activity (WHO): <http://gamapserver.who.int/GlobalAtlas/home.asp>

Influenza Vaccine Composition for 2006-2007 influenza season

WHO has recommended the composition of the 2006-2007 trivalent influenza vaccine for the northern hemisphere influenza season (November 2006 to April 2007) to contain:

an **A/New Caledonia/20/99(H1N1)-like virus**;
 an **A/Wisconsin/67/2005(H3N2)-like virus**;
 a **B/Malaysia/2506/2004-like virus**

The two of the three components (the influenza A [H3N2] and the influenza B components) in the WHO recommendation have changed from the current 2005-2006 season vaccine components. See the [WHO recommendation report](#) for more information on the circulating strains, antigenic characteristics, and vaccine studies identified through the WHO influenza network.

Avian Influenza Updates

Human Avian Influenza. 186 cases of lab-confirmed avian influenza (56% case fatality rate). The table was gathered from the [WHO website](#) on 28 March 2006 and has been updated as of 24 March 2006.

Country	2003		2004		2005		2006		Total	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
Azerbaijan	0	0	0	0	0	0	7	5	7	5
Cambodia	0	0	0	0	4	4	1	1	5	5
China	0	0	0	0	8	5	8	6	16	11
Indonesia	0	0	0	0	17	11	12	11	29	22
Iraq	0	0	0	0	0	0	2	2	2	2
Thailand	0	0	17	12	5	2	0	0	22	14
Turkey	0	0	0	0	0	0	12	4	12	4
Viet Nam	3	3	29	20	61	19	0	0	93	42
Total	3	3	46	32	95	41	42	29	186	105

Total number of cases includes number of deaths.

WHO reports only laboratory-confirmed cases.

DoD Global Influenza Surveillance Program Background

DoD-GEIS Influenza Surveillance Network

The DoD Global Influenza Surveillance Program was established by the Global Emerging Infections Surveillance and Response System (GEIS) in 1997. The program established an influenza surveillance network, which includes the Air Force Influenza Surveillance Network (global influenza surveillance established in 1976), Navy (recruit adenovirus surveillance established in 1996), and the DoD overseas medical research facilities (i.e., the Naval Medical Research Unit located in Cairo, Egypt [NAMRU-3] and the Naval Medical Research Unit located in Jakarta, Indonesia [NAMRU-2]).

AFIOH Influenza Surveillance Network

In 1976, the US Air Force Medical Service began conducting routine lab-based surveillance of influenza throughout the world. Efforts were expanded when it became part of the DoD-GEIS influenza surveillance network in 1997. AFIOH manages the Air Force surveillance program that includes global influenza surveillance among DoD beneficiaries at 43 tri-service sentinel sites (including deployed locations in Iraq, Qatar, Kuwait, and Kyrgyzstan), several non-sentinel sites, two DoD overseas medical research laboratories (the Armed Forces Research Institute of Medical Sciences located in Bangkok, Thailand [AFRIMS], and the U.S. Naval Medical Research Center-Detachment [NMRC-D] located in Lima, Peru) that collect specimens from local residents in Nepal, Thailand, Argentina, Bolivia, Ecuador, Peru, and Colombia, and the US Army Center for Health Promotion and Preventive Medicine-West (CHPPM-W), that collect specimens from local residents in El Salvador, Guatemala, and Honduras.

Sentinel Site Surveillance

Sentinel site surveillance describes specimens submitted by the 43 sentinel sites using the protocol of collecting 6-10 specimens each week from patients meeting the ILI case definition (**fever $\geq 100.5^{\circ}\text{F}$ and cough or sore throat**) and completing the "Influenza Surveillance Questionnaire" (see [our website](#) to review the questionnaire and the Sentinel Site Surveillance Report). Two sentinel sites, Tripler Army Medical Center (AMC), located in Hawaii, and Landstuhl Regional Medical Center (RMC), located in Germany, send selected influenza positive specimens to AFIOH to be further characterized. These sites are major medical centers and have established laboratories capable of detecting influenza. Their involvement in the DoD-wide program is valued due to their mission and geographical location.

Processing Methods

Specimens are processed in BSL-2 conditions (BSL-3 available) and tested for influenza, parainfluenza, adenovirus, enterovirus, herpes simplex virus (HSV), and respiratory syncytial virus (RSV). Specimens are held up to 14 days before a negative result is given. All influenza isolates are typed as A or B and a portion are subtyped using hemagglutination-inhibition (HI) or polymerase chain reaction (PCR) procedures. A portion of these isolates undergo molecular sequencing.

2005-2006 Trivalent Influenza Vaccine Composition

Northern Hemisphere

- A/New Caledonia/20/99-like (H1N1)
- A/California/7/2004-like (H3N2)
- B/Shanghai/361/2002-like

2006 Southern Hemisphere

- A/New Caledonia/20/99-like (H1N1)
- A/California/7/2004-like (H3N2)*
- B/Malaysia/2506/2004

*The currently used vaccine virus is A/New York/55/2004

This report was prepared on **28 March 2006** by Angela Owens. For an expanded view of the information in this report, visit our website at <https://gumbo.brooks.af.mil/pestilence/Influenza/>. Also available on our website is a list of previous weekly surveillance reports, program information for sentinel sites (including an educational briefing and instruction pamphlets for clinic staff), and an overview of historical data.

Please visit the [DoD-GEIS website](#) for an overview of influenza surveillance at all collaborating DoD-GEIS organizations.

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